

CLAIMS

What is claimed is:

1. A liquid crystal display, having a liquid crystal panel and backlights, comprising:
a signal converter to convert selectively input analogue video signals into digital video signals in synchronization with a first predetermined sampling clock signal;
a scaler to sample the digital video signals at a preset resolution in synchronization with a second predetermined sampling clock signal, and to extract a horizontal synchronization signal from the sampled digital video signals;
a panel driver to display the digital video signals on the liquid crystal panel;
a controller to detect the extracted horizontal synchronization signal from the digital video signals to determine a display mode, to output the first and second predetermined sampling clock signals to the signal converter and the scaler, respectively, according to the determined display mode, and to generate inverter on/off signals whenever the display mode is changed ; and
an inverter to drive the backlights in synchronization with the detected horizontal synchronization signal and the inverter on/off signals.
2. The liquid crystal display of claim 1, wherein the inverter comprises:
a pulse width modulator to generate pulse width modulation signals, which are synchronized with the horizontal synchronization signal, and to turn the pulse width modulation signals on or off according to the inverter on/off signals generated by the controller;
a switching transformer to switch a power supply on or off according to the pulse width modulation signals ; and
a lamp which radiates light using the power supplied by the switching transformer.
3. The liquid crystal display of claim 1, wherein the controller generates and outputs the inverter off signals to the inverter when the display mode is changed, and continues generating and outputting the inverter off signals until the horizontal synchronization signal is detected.

4. A method of controlling an inverter to drive backlights in a liquid crystal display, comprising:

determining whether a display mode changes while video signals are displayed; and
applying backlight off signals to the inverter while the display mode is changing, and
applying backlight on signals to the inverter when a horizontal synchronization signal is detected.

5. The method of claim 4, wherein the horizontal synchronization signal begins to cause a transient effect when the display mode is changed.

6. A method in which a controller controls backlights in a liquid crystal display, comprising:

controlling an inverter to drive the backlights in synchronization with a first horizontal synchronization signal in a digital video signal when video signals are input;

determining whether a display mode has been changed;

inputting an inverter off signal to the inverter, if the display mode is changed, to control the inverter to not drive the backlights;

checking whether the display mode change is completed; and

inputting an inverter on signal to the inverter if the display mode change is completed so as to control the inverter to drive the backlights in synchronization with a second horizontal synchronization signal.

7. The method according to claim 6, further comprising repeating the checking if the display mode change is not completed.

8. The method according to claim 6, further comprising skipping the determining, the inputting the inverter off signal, and the checking operations if the user has not changed the display mode.

9. The method according to claim 6, wherein the determining comprises recognizing key signals as display mode change signals if the video signals are those of a PC and are displayed when the user inputs the key signals to change the video signals.

10. The method according to claim 6, wherein the determining comprises determining whether the display mode is changed from a PC to that of a DTV.
11. The method according to claim 6, wherein the checking lasts until the second horizontal synchronization signal is generated.
12. The method according to claim 6, wherein the checking comprises determining whether the second horizontal synchronization signal exists in the video signals.
13. A method of driving backlights before, during, and after a change in a display mode, and turned on thereafter, the method comprising:
 - driving the backlights in synchronization with a first synchronization signal in a video signal;
 - determining whether a display mode has been changed;
 - stopping the driving, if the display mode is changed;
 - checking whether the display mode change is completed; and
 - resuming driving the backlights in synchronization with a second synchronization signal in a video signal if the display mode change is completed.
14. The method according to claim 13, further comprising repeating the checking if the display mode change is not completed.
15. The method according to claim 13, further comprising skipping the determining, the inputting, the stopping, and the checking operations if the display mode is not changed.
16. The method according to claim 13, wherein the determining comprises recognizing key signals as display mode change signals.
17. The method according to claim 13, wherein the checking lasts until the second synchronization signal is generated.
18. The method according to claim 13, wherein the checking comprises determining whether the second synchronization signal exists in the video signal.

19. A panel and an inverter in a liquid crystal display having backlights, which are synchronized with one another to avoid oscillatory interference therebetween and to remove noise from a screen, wherein the inverter is turned off during a display mode change to prevent the backlights from being turned off.

20. A panel and an inverter in a liquid crystal display having backlights, which are synchronized with one another, wherein the inverter is turned off during a display mode change to prevent the backlights from being turned off.

21. A method of controlling a liquid crystal display having backlights in which selectively input video signals are converted into digital video signals to be sampled, comprising:

- extracting a first synchronization signal from the sampled digital video signals;
- driving the backlights in synchronization with the first synchronization signal;
- stopping the driving if a display mode of the liquid crystal display is changed;
- extracting a second synchronization signal from the sampled digital video signals;
- driving the backlights in synchronization with the second synchronization signal if the changing of the display mode is determined to be completed.

22. A liquid crystal display, having a liquid crystal panel and backlights, comprising:
a signal converter to convert a video signal into a digital video signal in synchronization with a first sampling clock signal;

- a scaler to sample the digital video signal in synchronization with a second sampling clock signal, and to extract a first synchronization signal therefrom;

- a panel driver to display the digital video signals on the liquid crystal panel;
- a controller to detect the synchronization signal from the digital video signal to determine a display mode, to output the first and second sampling clock signals to the signal converter and the scaler, respectively, according to the determined display mode, and to generate inverter on/off signals whenever the display mode is changed; and

- an inverter to drive the backlights in synchronization with a second synchronization signal and the inverter on/off signals.

23. The liquid crystal display according to claim 22, wherein the controller determines a display mode.

24. The liquid crystal display according to claim 23, wherein the controller outputs the first and second sampling clock signals to the signal converter and the scaler, respectively, according to the determined display mode.

25. The liquid crystal display according to claim 22, wherein the inverter comprises a pulse width modulator to generate pulse width modulation signals synchronized with the first synchronization signal, and to turn the pulse width modulation signals on and off according to the inverter on/off signals generated by the controller.

26. The liquid crystal display according to claim 25, wherein the inverter further comprises a switching transformer to switch a power supply on or off according to the pulse width modulation signals input from the pulse width modulator

27. The liquid crystal display according to claim 26, wherein the inverter further comprises a lamp to radiate light using the power supplied by the switching transformer.

28. The liquid crystal display according to claim 22, wherein the controller generates and outputs inverter off signals to the inverter when the display mode is changed, and continues generating and outputting inverter off signals until the second synchronization signal is detected.

29. A liquid crystal display, having a liquid crystal panel and backlights, comprising:
a signal converter to convert a video signal into a digital video signal in synchronization with a first sampling clock signal;
a scaler to sample the digital video signal in synchronization with a second sampling clock signal, and to extract a first synchronization signal therefrom;
a panel driver to display the digital video signals on the liquid crystal panel;
a controller to detect the synchronization signal from the digital video signal to determine a display mode, to output the first and second sampling clock signals to the signal converter and the scaler, respectively, according to the determined display mode, and to generate inverter on/off signals whenever the display mode is changed; and

an inverter, which is synchronized with the liquid crystal panel to avoid oscillatory interference therebetween, to drive the backlights in synchronization with a second synchronization signal and the inverter on/off signals.